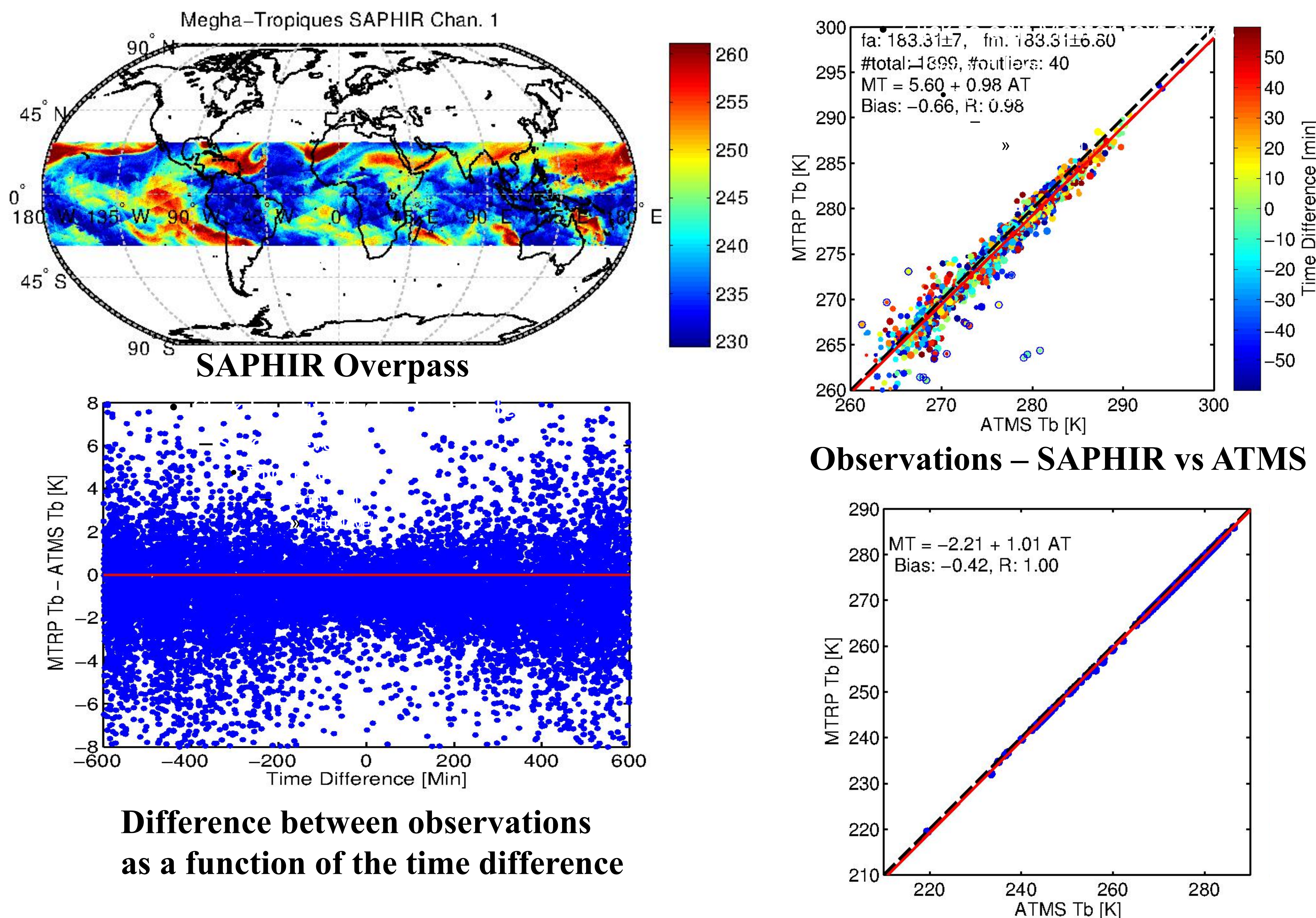


Abstract

Observations from modern microwave humidity sounders including SAPHIR onboard Megha-Tropiques and ATMS onboard Soumi NPP satellites are inter-compared and inter-calibrated. Observations from the two sensors were intercalibrated using simultaneous nadir observations during the period 2012-2013. Since NPP is a polar orbiting satellite but Megha-Tropiques is a low-inclination satellite, enough coincident observations can be collected in a short period of time. In addition, the satellite observations were validated against high-quality radiosonde data from the ARM program as well as GPS-RO observations. The results show that the observations from the two sensors are in good agreement with each other as well as with the simulated radiances from radiosonde and GPS-RO observations

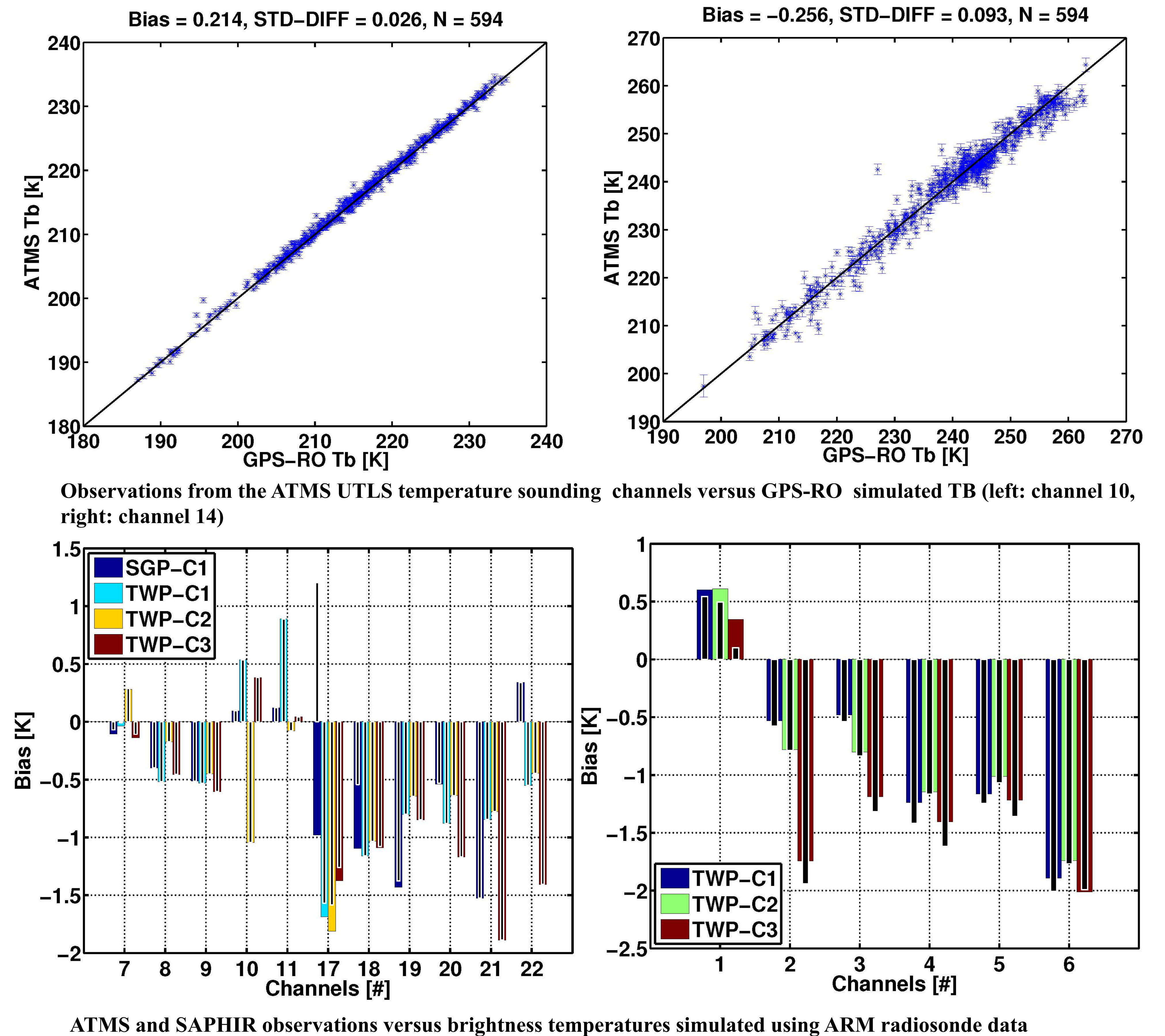
Inter-comparing ATMS and SAPHIR



ATMS	SAPHIR	Bias (Obs)	Bias (Sim)	Obs - Sim
183±7.0	183±6.8	-0.68	-0.42	-0.26
183±4.5	183±4.2	-1.56	-0.91	-0.65
183±3.0	183±2.8	-1.23	-0.93	-0.30
183±1.0	183±1.1	+0.42	+0.90	-0.48

**Double difference:
observations minus
simulations**

Validation vs. Radiosonde and GPS



Summary

- Observations from the ATMS and SAPHIR WV sounding channels are in good agreement
- Observations from both ATMS and SAPHIR are in good agreement with the simulated Tbs from both radiosonde and GPS-RO observations. Some of the stratospheric channels show a larger bias in compare to GPS data (not shown) that can be due to RT calculations. This is still under investigation.
- Permanent monitoring of satellite observations is essential to maintain the quality that is required for weather and climate applications